

OHIO SEA GRANT AND STONE LABORATORY

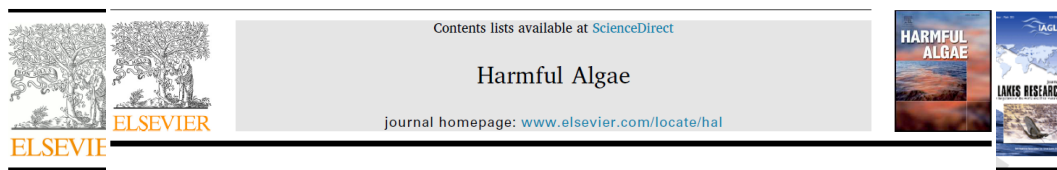
An Overview of Harmful Algal Bloom Research in Ohio

Dr. Chris Winslow, Director
Ohio Sea Grant and Ohio State University's
Stone Lab



Efforts on Numerous Fronts

- Senate Bill 299 (“Clean Lake 2020 Plan”); \$36M
- Open Lake Impairment Designation (EPA, NOAA, BGSU, UT, OSU’s Stone Lab, and Ohio Sea Grant)
- White paper turned peer review (OSU, Ohio Sea Grant, NWF, Heidelberg, and USDA)
- Understanding HABs: State of the Science (Sept. 12th)
- ECOHAB: forecasting algal bloom toxicity (OSU’s Stone Lab, LimnoTech, BGSU, MTU, UT, and Wayne State)
- H₂Ohio Initiative (Governor DeWine) - Protect State Water Quality
- Ohio Department of Higher Education HAB Research Initiative



Science meets policy: A framework for determining impairment designation
 Criteria for large waterbodies affected by cyanobacterial harmful algal
 blooms

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HAB Research Initiative

- Goals:
 - Produce safe drinking water
 - Assess human health impacts/risk
 - How do blooms behave
 - Assess nutrient runoff
- Collaborative priority setting and information sharing across academics, agencies, producers and numerous stakeholders
- Co-managed by Ohio Sea Grant and University of Toledo

Truly Collaborative



Projects in Play

- Environmental drivers of saxitoxin production in recreational and drinking waters; BGSU/Davis
- Model simulating how conservation actions might impact tile-drained fields; OSU/Kalcic
- Design and launch of Harmful Algae Bloom Satellite-1; UC/McGhan
- Expanding Heidelberg Tributary Loading Program; Heidelberg/Johnson

Projects in Play

- Lake Erie open water HAB impairment criteria; Toledo/Bridgeman
- Evaluating changes in on-farm manure management on dissolved phosphorus runoff; OSU/Keener
- Mapping of agricultural BMPs and farmer perceptions; Toledo/Rai
- Spatial distribution model for manure from CAFOs; Toledo/Lawrence

Projects in Play

- Tracking and attenuating nutrient loads from Manure fertilization; BGSU/Midden
- Biosensors for detection of multiple cyanotoxins in water; OSU/Lu
- Environmental fate and persistence of Microcystin in land applied drinking water treatment residuals; OSU/Basta
- Quantifying viral activity associated with blooms to inform water treatment; BGSU/McKay

Projects in Play

- Optimizing the use of powdered activated carbon for Saxitoxin removal; OSU/Lenhart
- Microcystin detoxifying water biofilters; Toledo/Huntley
- Sensors for detection of Microcystins in human biological samples (e.g, blood and urine); OSU/Lu
- HAB associated health effects and airborne microcystin levels in recreational lake users; Toledo/Ames

Projects in Play

- Identifying biomarkers of acute and chronic cyanotoxin exposure in organisms with liver cancer; OSU/Knobloch
- Novel therapies for microcystin induced toxicity in individuals with pre-existing liver disease; Toledo/Kennedy
- Inflammatory bowel disease and susceptibility to microcystin toxicity; Toledo/Haller
- Physiological, growth and survival of juvenile yellow perch and walleye exposed to toxic cyanobacteria; OSU/Ludsin

Any Questions?

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